# STUDIES IN NORTH AMERICAN DIPTEROLOGY: PIPUNCULIDÆ.

BY E. T. CRESSON, JR.

Plates V–IX.

This paper is the result of about two years interrupted study of this little known family of Diptera. Unknown to either of us, Mr. Nathan Banks had also been doing some work with the genus *Pipunculus*; but upon discovering that I had also been working on the same group with much more material at hand, he kindly turned over to me his collection and descriptions of some forms he considered new. These latter I give in this paper as "Banks, n. sp." accompanied by my own observations upon the types. The collection before me for study composes, besides that already at the Academy of Natural Sciences of Philadelphia, the material loaned by Mr. C. W. Johnson of the Boston Society of Natural History, which, upon addition of that of Mr. Banks, makes a sum total of 216 specimens, of which I find 31 known species and 31 which I consider new.

My first attempt in the study of this group of insects was in endeavoring to determine a few specimens in the collection here in Philadelphia. I found most of them undescribed, but hesitated to describe them as new upon such small amount of material at hand. Mr. Johnson then offered me the loan of the undetermined material in his own collection and in that of the Boston Society of Natural History, and so my humble attempt has emerged into an undertaking far beyond my expectations. I regret the inability of giving a more exhaustive treatise on the subject, but the pressure of work on another paper I had already begun makes this impossible. Still it is hoped that this contribution will be an incentive to some other student, who can give the subject a more monographic treatment; for by special collecting, breeding and the borrowing of all the available material, one should be able to work up a very valuable monograph of this obscure, but well-defined family.

It seems that there are either many good species, or else the individual variation is very great, for only a small number of the forms are represented by more than one or two specimens; so it is with some hesitancy that I am considering as new many of the forms herein described, especially where only one sex is represented.

I regret that this well marked family is in danger of losing its old name, in fact has lost it in a recent catalogue of Diptera.* The recent discovery of an early paper by Meigen, published in 1800,† antedating other publications from which many well known genera of Diptera date, throws a cloud over Dipterological nomenclature. The absence of specified generic types in that paper, together with the short generic descriptions, makes it of doubtful value in the opinion of some students. It was only with the help of Meigen's later work, published in Illiger's Magazine in 1803, that most of the genera could be placed at all, still leaving some very doubtful. In looking over the situation, with the help of the original literature, regarding the genus affecting this family, questions arose which threw so much doubt over the whole affair, that I have concluded to disregard the paper entirely. I will have to go into a short analysis of the situation in order to bring out these queries as they appeal to me.

Dr. F. Hendel, who first brought this paper to the attention of the scientific world, has published an extended article on it,‡ in which he quotes the generic descriptions and gives his ideas of their application. On page 59 he gives *Dorilas* Meigen, as corresponding to the genera *Microcera* Meig., and *Pipunculus* Latr., thus making these two synonyms of *Dorilas*, which as the type genus, would change the name of this family to Dorilaidæ. Meigen characterizes his genus *Dorilas* as: "Antennes a deux articulations: la seconde inclinée, garnie a la base d'un poil simple. Tete hémisphérique. Ailes croisées, obtuses. 1 espèce." Upon referring to his later paper* it is seen that the descriptions of the genus *Microcera* is very similar to that of *Dorilas*, still he names no type. Some years later, in 1824, he states† that his genus *Microcera* is antedated by Latreille's *Pipunculus*. This fixes *Microcera*, throwing it into synonomy under *Pipunculus ;* but it is only upon the similarity existing between the descriptions of *Dorilas* and *Microcera* that leads one to consider them synonymous.

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* Catalogus Dipterorum by C. Kertesz, Vol. VII, 1910.

† Nouvelle Classification des Mouches a Deux Ailes (Diptera L.), Paris.

‡ Verh. k. k. Z. B. Gesell. in Wien, LVIII, 43–69, 1908.

The only species of this family known at the time of Meigen's early paper was *Musca cephalotes* Bosc.,‡ which seems to be a true *Pipunculus*, and was used later by Latrielle§ as the type of his genus *Pipunculus*|| under the name of *Pipunculus campestris* Latr. It may be supposed that Meigen had this species before him at the time of his writing the first paper ; but his description of *Dorilas* seems to apply more truly to a species which would now go under *Verrallia ;* the head of that genus being truly hemispherical, while that of *Pipunculus* is almost spherical. Later on Meigen said that Fabricius had shown him a specimen of the genus *Pipunculus* in 1804, but he, Meigen, makes no mention of possessing one. So we are not certain that Meigen did erect his genus *Dorilas* upon a true *Pipunculus*.

As to whether *Dorilas* can be admitted under the rules of nomenclature has been discussed by Prof. J. M. Aldrich¶ and Mr. D. W. Coquillett,** from which it seems to be a question that can only be settled by the Committee on Zoological Nomenclature. So it is seen there is no certainty, but much guess work, which is, to my mind, sufficient cause for disregarding, for the present, the use of *Dorilas* Meigen, as a valid genus. Kertesz, in his Catalogus

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* Illiger's Magazine, II, 273, 1803.

† Syst. Beschr. Eur. Zweifl. Ins., IV, 19.

‡ Journ. d'hist. Nat., Paris, II, 55, Pl. 28, Figs. 5–7, 1792.

§ Hist. Nat. Crus. et Ins., IV, 392, 1805.

|| *Loc. cit.*, III, 463, 1805.

¶ Can. Ent., XL, 370 and 432, 1908.

** *Loc. cit.*, 457.

Dipterorum, amends the name to *Dorylas*. With these few words of analysis and explanation I will let the matter drop as irrevelent to the purpose of this paper.

For the proper description of the species in this paper, names are used which may be unfamiliar to many students, and to some parts of the genitalia I have given arbitrary, or provisional, names for convenience, as I have no time to go into anatomy and terminology. All these names I will here explain.

The *squamæ*, in this family, are mere ciliate ridges, being rudiments of a pair of membraneous scales situated above the halteres and back of the root of the wings, perhaps more often known as *Tegulæ*, *Calyptræ* or *Alulæ*. The *ventral margins* of the abdomen are the ventral portion of the dorsal plates; the *lateral angles* of the segments I have designated as the lateral portion of the apical margin just where the dorsal plates turn down; these angles are often pollenose, being the dorsal attenuations of the pollen on the ventral margins. The examination of the genital apparatus shows a similarity in structure but great diversity in form. It is here that much can be done in the study of this family. I have not given these organs as much importance as they probably should have; but it appears to me that in some species there is much variation, or, on the other hand, the forms I have included under one may be distinct.

The *hypopygium* of the male seems to be composed of five separate, at least externally, chitenous sections or lobes, of which, in some species of *Pipunculus*, only one, the *terminal lobe*, is visible; this is sometimes very irregularly developed, being strongly compressed laterally, usually to the right of the median line of the abdomen, in which case the hypopygium is said to be *assymetrical*. This lobe is generally, but not always, furnished, usually to the right of, or at its apex, with an indentation or *cleft*, sometimes known as the *rima*, and which in the genus *Verrallia* (Fig. 44) completely divides this lobe dorso-ventrally into two separate parts, or is, in a species of *Pipunculus* so widely developed as to occupy nearly the entire lobe, or at other times is only indicated by an opake spot. This cleft is sometimes provided with a filiform appendage (Fig. 47) which often coaleses with the bottom of the cleft in form of a *vertical keel* (Fig. 69). To the left of the terminal lobe is the *intermediate lobe* (Fig. 49) which is often invisible, being withdrawn into the fifth abdominal segment; it is never very much developed, and is only distinguished from the terminal lobe by the vertical incisure in form of a finely impressed line, which is one of the "two dorso-ventral clefts . . . to the left of the median line" mentioned by Dr. Hough in his description of *P. atlanticus*. To the extreme base of the intermediate lobe, often ventral in position, is the *lateral lobe* (Fig. 49), which is seldom visible, and is similar to the intermediate lobe, being separated from it by an impressed line. At the extreme right of the terminal lobe, and mostly ventral in position, is the *ventral lobe* (Fig. 61), which at its base is probably the copulating apparatus; this lobe is most conspicuously developed in *Pipunculus atlanticus*, and can at once be distinguished, especially when, as it often is, of a translucent yellow color. Above, and at the extreme base of the terminal lobe, is the *basal lobe* (Fig. 44), which is most strongly developed in *Verrallia*, but indications of it can be seen in some specimens of *Pipunculus* beneath the apical margin of the fifth segment. The genitalia of the female is much more simplified, being composed only of the more or less globose *base*, and the aculeate *ovipositor*, at the base of which, beneath, is an opening, revealed by a tuft of short hairs (Fig. 86). The presence or absence of the cleft in the terminal lobe of the males is of much importance systematically, but it may be quite variable in form in the same species, while in *Pipunculus atlanticus* it may be quite distinct or hardly discernable; some times the entire hypopygium is extended so as to reveal the yellowish membrane between the different lobes.

The *femoral spines* are the series of small black teeth or spines on the flexor or under surface of the femora, being more developed on the apical portion; these spines are quite distinct and in two rows, or, on the other hand, are hardly distinguished under high magnification.

The *stigma* is that portion of the costal cell between the apices of the auxiliary and first veins, and is often known as the third costal section; it is sometimes tinged with brown, especially in certain groups. The *fourth section* just follows, being that portion of the costa between the apices of the first and second veins. The *third section* of the fourth vein is that portion between the anterior and posterior cross-veins.

For a satisfactory examination of these insects, especially of the bristles, which are generally more like hairs than bristles, a compound microscope is necessary, but not essential for determining most of the species as characterized in the synopsis, except perhaps those of the *subvirescens* group, which will give the most trouble in this respect.

I have followed the recommendations of the Entomological Congress in designating a single specimen as the type of each species, but have called the remainder of the series paratypes, as I do not favor the use of the much misused term "cotype" when there is a type designated. The descriptions are, of course, based upon the series which is composed of the type and its paratypes. With the habitat of each species I have given, in parentheses, after each locality, the number and sex of specimens examined, followed by the name of the collector and the collection possessing such specimens. Where the name of the collector is not given, the same is unknown, or is the owner of the collection. I wish here to acknowledge my indebtedness to Mr. Banks for his generosity in turning over his collection for my use, these are designated "coll. Banks;" also to Mr. Johnson who kindly loaned me the extensive New England material in the collection of the Boston Society of Natural History ("*B. S. N. H.*") and from his own collection, "coll. Johnson." Those designated "*A. N. S.*" are from the collection at the Academy of Natural Sciences of Philadelphia.

While on the subject it was thought that a synopsis, as well as a bibliography and catalogue of the North American species, would be useful to have under one cover, and would be helpful to those students wishing to determine their own material, and who have not access to the literature required. The completeness of this synopsis is greatly hampered on account of the limited amount of material at hand representing the species heretofore described; but will serve, at least, as a fairly good guide to the known species of this family inhabiting North America. In the compilation of this synopsis only those characters which seem the least variable and most conspicuous are used. No attempt is made towards a serious classification.

The flies of this family are small, nearly bare, except *Verrallia*, black, with at most only the humeri, halteres, the sides of the abdomen rarely, and the legs, yellow; more or less variegated in appearance by the presence of silvery pubescence on the front and face, and gray or brown pollinose coating on the bodies and legs. The surfaces are generally shining, being more or less obscured by the density of the pollen, so that rubbed specimens are more shining than normal; the abdomen is sometimes semi-shining, as it were, caused by the minute granulation or rugulosity of the surface. The color of the humeri is a very good character, but close examination is necessary on account of their being covered by the swollen occiput, or, rarely, the color is difficult to distinguish between a brown and yellow.

The head is large, unusually so, larger than the thorax, especially in the genus *Pipunculus*; composed mostly of the compound eyes, leaving the narrow face and front; the latter, in the male reduced to a small triangle by the contiguous, rarely narrowly separated, eyes. Antennæ situated about on line with the middle of the head, composed of a small second joint and an elongate, pendant, third, which is more or less acute or acuminate apically, bearing near its base above, a simple, naked, hair-like arista, which is more or less thickened basally. The mouth parts are generally retracted, but sometimes the small, clavate palpi are visible. The thorax is smaller than the head, quadrate, with the mesonotum and scutellum rarely with regularly arranged series of fine bristles; humeri well developed, sometimes appearing like scales. Abdomen ovate and flattened, or narrow and subcylindrical, consisting of five segments in the male and six in the female. Legs generally moderately slender, with apical portion of the femora and tibiæ more or less thickened, without distinct bristles, except the femoral spines, and the series of short minute appressed thorn-like bristles on the tibiæ, which are more distinct when the latter are yellow; the tarsi have long fine hairs at the apices of the joints. Claws generally very long and curved at tips, with large spatulate pulvilli and hair-like empodium. Wings hyaline, or, evenly gray or brownish, not maculate; venation varying as shown in the figures under the various species.

### TABLE OF GENERA.

1. Discal cell incomplete, the fourth vein beyond the anterior cross-vein being rudimentary and the posterior cross-vein wanting. **Chalarus.**

Discal cell complete........................................................2.

2. Head nearly spherical; occiput with turgid margin, being generally widely visible behind the eyes; ocellar bristles absent..3.

Head truly hemispherical; occiput not widely visible, *i. e.*, the head being closely applied to the thorax; ocellar and scutellar bristles distinct; pilose species..........................**Verrallia.**

3. Scutellar bristles well developed; third antennal joint reniform. **Nephrocerus.**

Scutellum and mesonotum without distinct bristles; third antennal joint acute or acuminate..............................**Pipunculus.**

## CHALARUS Walker.

This genus is at once distinguished by its venation. Only one, the European, species is known here,. Aldrich, in his catalogue, mentions that we have an undescribed species; and there is also another recorded from the White Mountains, New Hampshire, by Coquillett (1896 Slosson 263).

*C. spurius* Fallen (Figs. 1, 43, 152), has been reported from New Hampshire (1902 Slosson 7), and from New Jersey (1899 Smith 666), and before me are a number of specimens from Norwich, Vt,. Mt. Ascutney, Vt., Rockport, Mass., Auburndale, Mass. (*Johnson*, *B. S. N. H.*); and Swarthmore, Pa. (*Cresson*, *A. N. S.*). Taken June to August.

## VERRALLIA Mik.

Allied to *Pipunculus*, but more distinctly pilose, with a pair of prominent ocellar bristles; the head is closely applied to the thorax, so that the occiput is not puffed out behind the eyes as it is in that genus; the third antennal joint rounded apically, with no sign of an angle. We have only a species described from the State of Washington, *V. opaca* Will., and the following, which appears to be an European representative.

**V. pilosa** Zetterstedt.

♂. Front and face silvery; vertex opake, black, with 2 long black, ocellar bristles; occiput opake, black. Antennæ (Fig. 2) with second joint black, bearing long black bristles above and longer yellowish ones below which extend beyond apex of third; third shorter than second, yellow to black at base, more or less silvery. Thorax opake black, or, in places somewhat shining; more or less brownish pruinose with black pile and long bristles; the latter can be distinguished among the pile as follows: 2 notopleurals, 1 supraalar, 2 postalars, 1 prescutellar, and 1 or 2 humerals. Scutellum concolorous, with black pile and 4 marginal bristles. Pleuræ and metanotum hardly grayish tinged; pteropleura pilose; humeri and halteres black; squamæ yellowish. Abdomen opake, black, with only the lateral angles of segments 1–4 grayish; fifth equalling fourth; second the longest; clothed with long blackish pile, especially lateral margins, but longest on first where it forms quite a distinct lateral tuft. Hypopygium (Figs. 44–45) as long as second segment, more shining, with basal and intermediate lobes broadly visible from above; the terminal lobe completely divided by a cleft extending to the base; ventral lobe brownish, not conspicuously developed. Legs slender, black, with only the knees yellow, and the basal joints of tarsi brown; fore femora with at most only a weak tuberosity beneath, which is sometimes hardly discernable; fore and middle femora posteriorly, and post-femora anteriorly, with a series of yellow hairs, or, those on the latter sometimes appearing black; post-tibiæ with an extensor series of same color hairs; otherwise the legs have only short pile and inconspicuous series of hairs. Wings (Fig. 163) brownish, with colored stigma. Length, 4.5 mm.; wings, 4.8 mm.

♀. Generally cinereous with brownish tinge; all pile and bristles yellow or whitish. Front parallel, narrower than face, brownish above and silvery at antennæ; ocellar bristles minute. Mesonotum somewhat indistinctly tri-vittate with brown; halteres and humeri yellow, bases of abdominal segments opake-black, which color is more or less diffused apically, sometimes nearly reaching the posterior margins; lateral tuft on first segment very conspicuous, of long white hairs or bristles; sixth segment somewhat shorter than second. Ovipositor (Fig 46) yellow, with black base. Legs with coxæ and femora black, but the apices of latter, tibiæ and tarsi yellow; sometimes the tibiæ are broadly infuscate medianly; all femora with a rather more distinctly developed tuberosity beneath than have the males (Fig. 120). Wings (Fig. 164) more grayish. Length, 3.8 mm.; wings, 4.8 mm.

Described from Europe. Before me are the following, upon which I have based the above description: Auburndale, Mass., 1 ♂; Mt. Greylock, Mass., 3 ♂; Mt. Equinox, Vt., 2 ♀. All collected by C. W. Johnson (*B. S. N. H.*) during May (Auburndale) and June. These are probably sexes of the same species. I cannot separate them from *pilosa* Zett., according to Verrall's description (1901 Verrall 71). The only differences seem to be in the less conspicuous femoral warts, the less grayish abdomen, and the darker legs of the males, while the females are practically identical. This form seems to be intermediate between this species and *vilosa* v. Ros. according to the development of the femoral warts. Williston's western species, *opaca*, differs in the venation as well as possessing black, instead of yellow bristles, his description being based upon a female. Of course there is a possibility of the above specimens belonging to a distinct species, but only comparison with the European *pilosa* will determine that question.

### NEPHROCERUS Zetterstedt.

The species of this genus are in size the largest of the family. They may be readily distinguished by the reniform third antennal joint, the well developed bristles on the monosotal margin, and the inflated humeri and scutellum; the latter also having well developed bristles. In general appearance they are similar to those of the genus *Pipunculus*, differing in the above mentioned characters. Only one species is known here, *N. daecki* Johnson, described from Long Island; but there is another species reported from the White Mountains, New Hampshire (1897 Slosson 239).

### PIPUNCULUS Latrielle.

In number of species this genus is the largest in the family. Distinguished by the generally acute third antennal joint, the apex of which is often drawn out into a long spiniform beak, and tho sometimes nearly round apically, there is always an indication of an angle; the occiput is puffed out and generally widely visible at the margin, but centrally concave and more or less closely applied to the thorax; all bristles are small and indistinct; the head is larger in proportion than in the other genera. Of the specimens examined the eyes of all the males are in contact, unless otherwise mentioned, and the femora have flexor spines, although these are sometimes so minute as to be scarcely discernable under high magnification. The cleft of the hypopygium is understood to be on the right unless otherwise noted.

A knowledge of the life history of this group of insects would be a great help in the study, and it is only by breeding that many of the species can best be procured, as Mr. Perkins* has already done with his Australian and Hawaiian species. They are known to be parasitic on Homoptera.

## TABLE OF SPECIES.

Males ........................................ 1.
Females ........................................ 35.
1. Stigma colored, generally long and conspicuous........................ 2.
Stigma hyaline, or very small ........................................ 26.
2. Fourth vein beyond post-cross vein with fork (Fig. 137) ........... 3.
Fourth vein normal........................................ 5.
3. Antennæ long, white acuminate........18. **appendiculatus** n. sp.
Antennæ obtusely pointed........................................ 4.
4. Femora yellow; mesonotum only microscopically pubescent. North Carolina species..................31. **constrictus** Banks, n. sp.
Femora more or less blackened medianly; mesonotum distinctly pilose. Mexican species..................17. **elegantulus** Will.
5. Humeri brown or black ........................................ 6.
Humeri yellow or white........................................ 18.
6. Legs entirely yellow; knobs of halteres black. 16. **atlanticus** Hough.
At least all femora with distinct black rings.............................. 7.
7. Hypopygium cleft........................................ 8.
Hypopygium not cleft.
Antennæ yellow.. ....................................5. ? **flavitarsis** Will.
Antennæ black ........................................ 17.
8. Hypopygium smaller than fifth segment, generally only a little visible, with apical cleft ........................................ 9.
Hypopygium as large, or larger than fifth segment and generally assymetrical........................................ 11.
9. Halteres black or brown ........................................ 12.
Halteres white or yellow ........................................ 10.

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* Rept. Exp. Sta. Hawaii. Sugar Plant. Ass., Div. Ent., Bull. No. 1, pt. 4, 1905.

10. Abdomen shining, with bases of segments opake; tibiæ and tarsi yellow ........................................20. **mainensis** n. sp.
Abdomen polished, with only apex of first silvery laterally. 34. **varius** n. sp.

11. Abdomen entirely opake, velvety-brown or black, without trace of gray; halteres brown. 21. **cingulatus** Loew. (**velutinus** n. var.).
Abdomen subopake, more or less cinereous, at most opake-black only at bases of segments............................................. 13.
Abdomen shining or polished, with bases of segments more or less velvety-black, at most only first segment and ventral margins cinereous.
Tibiæ largely brownish or black............21. **cingulatus** Loew.
Tibiæ yellow, scarcely tinged with brown......22. **fuscus** Loew.

12. Abdominal fasciæ all white.
Antennæ black, short acuminate........6. ? **nigricornis** Adams.
Antennæ yellow .....................................5. ? **flavitarsis** Will.
Antennæ black, acute; ultimate section of fourth vein straight. Western species................................7. **alternatus** n. sp.
Abdominal fasciæ faintly grayish, or nearly shining, only first segment white; ultimate section of fourth vein strongly sinuate ..............................................8. **nigripes** Loew.
Abdomen polished, at most only base cinereous..34. **varius** n. sp.

13. Antennæ yellow. Mexican species.............5. ? **flavitarsis** Will.
Antennæ black ...............................................................14.

14. Abdomen distinctly fasciated with white or gray, but bases of segments opake .......................................................15.
Abdomen not distinctly fasciated, sometimes nearly shining.... 16.

15. Wings distinctly tinged with brown; hypopygium subhemispherical, small, cleft ...........................9. **semifasciatus** n. sp.
Wings hyaline, or gray, only faintly brownish. Missouri species. 6. ? **nigricornis** Adams.

16. Hypopygium quadrate in outline, much larger than the short fifth segment, with broad apical cleft (Figs. 60–61). 10. **caudatus** n. sp.
Hypopygium more semicircular, hardly larger than the large fifth segment, with moderate cleft (Fig. 52). 11. **discolor** Banks, n. sp.

17. Antennæ short, acute; stigma as long or longer than fourth costal section .........................................2. **dubius** n. sp.
Antennæ abruptly, short acuminate; stigma shorter than fourth section..............................................1. **loewii** Kert.

18. Legs yellow, or, at most with only femora discolored above......19.
Femora black, at most only extremities yellow.........................20.

19. Abdomen subopake; apices of segments with or without gray fascia.

Small species (3.0 mm.) ................................15. **minor** n. sp.
Larger species (4.5 mm.) ......................16. **atlanticus** Hough.
Abdomen shining, with extreme bases of segments more or less opake-black; post-femora much thickened and somewhat discolored with brown (Fig. 121)......24. **femoratus** n. sp.
Abdomen shining, except first segment, and lateral margins cinereous; femora slender, not discolored.......33. **houghii** Kert.
20. Hypopygium cleft ..........................................................................21.
Hypopygium not cleft........................................................................24.
21. Abdomen opake, or subopake, more or less variegated with gray.............................................................................................22.
Abdomen polished, at most gray only at base and ventral margins.............................................................................................23.
22. Abdomen opake, brown and gray fasciated; tibiæ and tarsi yellow.
14. **aequus** n. sp.
Abdomen subopake, evenly brownish tinged, only faintly marked with gray.
New Mexico species ............................12. **fuscitarsus** Adams.
New York species............................11. **discolor** Banks, n. sp.
23. Antennæ yellow, long acuminate; knobs of halteres black; wings hyaline, with only apical portion of stigma colored.
35. **tarsalis** Banks, n. sp.
Antennæ black, short, acute; halteres yellow; wings brownish.
23. **viduus** n. sp.
24. Abdomen subopake, with more or less grayish tinge on dorsum..25.
Abdomen polished, only grayish at base and laterally.
35. **tarsalis** Banks, n. sp.
25. Hypopygium small, shorter than fifth segment; abdomen subcylindrical..............................................3. **affinis** n. sp.
Hypopygium large, longer than fifth, very broad; abdomen ovate, distinctly broadest at third and fourth (Fig. 72).
4. **confraternus** Banks, n. sp.
26. Legs and antennæ entirely yellow ..........................................27.
Legs yellow, with only a small, well defined, black, sub-basal femoral spot (Fig. 127); abdomen entirely shining black.
38. **atramontensis** Banks, n. sp.
Legs in part black ..........................................................................29.
27. Abdomen opake, brownish, more or less cinereous. Mexican species..............................................40. **flavicornis** Will.
Abdomen shining, more or less yellow laterally.........................28.
28. Antennæ acutely pointed. Mexican species.
37 39. **xanthopodus** Will.
Antennæ long, white acuminate.....~~40.~~ **flavomaculatus** Hough.
29. Tibiæ mostly yellow; first and lateral margins of segments 2–4 densely cinereous; hypopygium very large and symmetrical.
36. **albofasciatus** Hough.

Tibiæ mostly black; abdomen shining, or obscured, at most, only faintly cinereous (*subvirescens* group)............................30.

30. Post-trochanters with one tooth or appendage beneath..............31.

With two teeth or appendages beneath (Fig. 129). Western species. 52. **bidens** n. sp.

With, at most, only minute bristles or tufts of hair beneath.......32.

31. Post-femora with a basal tooth beneath (Fig. 125); post-tarsi distinctly dilated................................51. **appendipes** n. sp.

Femora without such tooth (Fig 132)....50. **unguiculatus** n. sp.

32. Hypopygium compressed to left..................44. **coquilletti** Kert,

Hypopygium more or less compressed to right, or small and apparently symmetrical..................................................33.

Hypopygium not compressed, much broader than long, subhemispherical (Fig. 105)............................47. **insularis** n. sp.

33. Abdomen ovate; fifth segment trapezoidal in dorsal outline......34.

Abdomen subcylindrical; shining; fifth segment rectangular in outline (Fig. 108)........................................43. **similis** Hough.

34. Abdomen sparingly clothed with fine, brownish pubescence, shining; at most, only ventral margins cinereous. 42. **subvirescens** Loew.

Abdomen with scattered, black, bristle-like hairs, shining; at most, only ventral margins cinereous...........46. **scoparius** n. sp.

Abdomen naked, without discernable hair or pile, subopake, or, more or less faintly submetallic, cinereous tinged. 45. **subnitens** n. sp.

35. Stigma colored, generally long and conspicuous........................36.

Stigma hyaline, or very small..................................................51.

36. Fourth vein with appendage beyond post-cross vein..................37.

Fourth vein simple and normal................................................38.

37. Eastern species; sixth abdominal segment shorter than fifth; stigma much shorter than fifth section; occiput normal. 25. **brevis** n. sp.

Eastern species; sixth segment as long as fifth; stigma equalling fifth section; abdomen shining; occiput unusually puffed out (Fig. 124)........................18. **appendiculatus** n. sp.

Western species; sixth segment longer than fifth; stigma shorter than fifth section; abdomen shining..9. **acuminatus** n. sp.

38. Humeri brown or black..........................................................39.

Humeri yellow or white..........................................................43.

39. Legs entirely yellow; abdomen broad, distinctly fasciated with gray; antennæ acute; robust species.......16. **atlanticus** Hough.

Legs yellow except discolored femoral rings; entire first and second segments, and narrow apices of following cinereous. 20. **mainensis** n. sp.

Legs mostly black ......................................................................40.

40. Ovipositor much longer than its base........................................41.

Not longer than its base.........................................................42.

41. Ovipositor not more than twice as long, and gradually tapering from its large elongate base. ..................8. **nigripes** Loew.

9. ? **semifasciatus** n. sp.

Slender, more than three times as long, and abruptly terminating its small globose base. Western species.

7. **alternatus** n. sp.

42. Abdomen broad, opake, or subopake, with gray fasciæ ; ovipositor longer than sixth segment........................2. **dubius** n. sp.

Abdomen broad, nearly shining, only grayish tinged laterally ; ovipositor not as long as sixth segment.

4. **confraternus** Banks, n. sp.

Abdomen shining, cinereous only laterally and a median stripe on the third segment ; femora not spinose.

26. **nitidiventris** Loew.

Abdomen shining, cinereous only laterally ; femora distinctly spinose................................................27. **horvathi** Kertesz.

43. Abdomen opake, or subopake, cinereous to nearly shining, but never polished..........................................................44.

Abdomen polished, at most only base and lateral margins cinereous....................................................................48.

44. Legs yellow, at most only femora discolored medianly.

Small species (3.0 mm.) ................................15. **minor** n. sp.

Larger species (4.5 mm. and over).....................................45.

Femora black, at most only extremities yellow..........................46.

45. Antennæ short, acute..............................16. **atlanticus** Hough.

Antennæ very long, white acuminate ...............14. **aequus** n. sp.

46. Ovipositor extending to second segment...13. ? **subopacus** Loew.

Ovipositor shorter, hardly reaching apex of fifth.......................47.

47. Abdomen opake, with gray fasciæ........................3. **affinis** n. sp.

Abdomen and scutellum nearly shining, only grayish tinged laterally..................................4. **confraternus** Banks, n. sp.

48. Legs entirely yellow ; femora slender ; ovipositor very short, with globose base ..........................................33. **houghii** Kert.

Legs yellow ; femora much thickened ; base of ovipositor elongate.

24. **femoratus** n. sp.

Femora black, or with extremities more or less yellow ..............49.

49. Antennæ with third joint black...................................................50.

Third joint yellow...................................32. **luteicornis** n. sp.

50. Ovipositor slender, curved, longer than, and abruptly terminating its elongate base (Fig. 86)......................30. **alpinus** n. sp.

Ovipositor short, abruptly terminating its large base ; femora mostly black (Fig 94) ...................... ......28. **angus** n. sp.

Ovipositor stout, gradually tampering from, its more or less elongate base ; legs mostly yellow (Fig. 87))......29. **sororius** n. sp.

51. Legs entirely yellow. Mexican species ....................................52.
Femora in part black ..............................................................53.

52. Abdomen shining black, more or less cinereous laterally, antennæ long acuminate..................................41. **willistonii** Kert.
Abdomen opake, brownish, densly cinereous laterally; antennæ acute.................................................40. **flavicornis** Will.

53. Tibiæ mostly yellow; abdomen elongate, subcylindrical, shining. 37. **flavomaculatus** Hough.
Tibiæ mostly yellow; abdomen short, robust, subopake and more or less fasciated.........................36. **albofasciatus** Hough.
Tibiæ mosty black (*subvirescens* group)..................................54.

54. Abdomen subopake, or more or less submetallic, cinereous tinged. Western species.........................................45. **subnitens** n. sp.
Abdomen shining, or at most only ventral margins cinereous...55.

55. Uppermost part of front shining or polished, only silvery near antennæ..................................................................56.
Front, except vertex, silvery or cinereous........48. **albiseta** n. sp.

56. Post-trochanters and all femora with two or three long, distinct, bristles near bases beneath (Fig. 128). Western species. 49. **proximus** n. sp.
Post-trochanters with, at most, very short hairs or bristles; abdomen ovate, with segments somewhat constricted at incisures ..............................................43. **similis** Hough.
Post-trochenters with minute scopa; abdomen slender, not constricted at incisures (Fig. 131)............46. **scoparius** n. sp.
Post-trochanters unarmed; abdomen normal ............................57.

57. Abdomen polished all over........................51. **appendipes** n. sp.
Abdomen cinereous on ventral margins and more or less apically. 47. **insularis** n. sp.

## DESCRIPTIONS OF SPECIES.

### GROUP I.

*Stigma colored; abdomen opake, or subopake; third section of fourth vein generally about twice as long as fourth.*

1. **P. loewii** Kertesz, *fasciatus*‖ Loew.

♂. Opake-black; antennæ black; third joint short and obtuse. Mesonotum opake, brownish-gray. Bases of abdominal segments opake, black; apex of first densely white; apices of following grayish, becoming whiter, thinner and less opake laterally. Hypopygium moderate, black, not cleft. Legs black, apices of femora, bases of tibiæ yellowish. Wings grayish; the colored stigma shorter than fourth section. Length, 3.5 mm.; wings, 4.1 mm.

Described from Texas. I do not know this species, but the stigma being shorter than the fourth section of costa, should distinguish it among those with non-cleft hypopygium.

2. **P. affinis** n. sp.

♂. Front and face silvery; occiput brownish or grayish; antennæ black, but third joint brownish, long white acuminate. Mesonotum rather opake, brownish, more or less cinereous along margins; scutellum concolorous. Pleura and metanotum cinereous to nearly white; humeri yellow; knobs of halteres black or brown, with brown or yellow pedicles. Abdomen subcylindrical, opake to subopake, brownish; apical margins and ventral margins of segments cinereous; fifth longer than fourth. Hypopygium (Fig. 80) small, cinereous tinged, not cleft; lateral and intermediate lobes just visible at extreme left; ventral lobe yellow. Legs slender; coxæ, femora except bases and apices, more or less developed; tibial ring, and apical joint of tarsi, black, otherwise the legs are yellow; inner surface of post-femora polished; spines weak; post-tibiæ slightly swollen at the middle, nearly straight. Wings (Fig. 166) grayish; stigma colored. Length, 3.8 mm.; wings, 4.4 mm.

♀. Similar to male, with front entirely silvery to the vertex; broad margins of mesonotum cinereous, leaving only the disc brown; scutellum also more grayish; sixth abdominal segment shorter than fourth, with a distinct longitudinal groove on middle of dorsum, entirely grayish tinge; ovipositor (Fig. 81) yellow, very short, hardly reaching apex of fifth ventral segment, abruptly terminating its broad, short, grayish tinged base, which hardly protrudes beyond the sixth segment. Wings are very long in proportion. Length, 3.8 mm.; wings, 6.0 mm.

*Type.*—♂. Cottage Beaulieu, Beaulieu, Quebec, June 14, 1906 (Figs. 13, 166, *Beaulieu*, *coll. Johnson*).

*Paratypes.*—St. Johnsbury, Vt., 1 ♂; Burlington, Vt., 1 ♀, Fig. 81; Barnstable, Mass., 1 ♀ (all by *Johnson*, *B. S. N. H.*); Great Falls, Va. (1 ♀, *coll. Banks*). Taken in June and July.

The males of this species seem to agree with those considered by Dr. Hough to be *subopacus* Loew, but the females do not agree with his description as to the ovipositor; and it does not seem probable that I have separate species in the two sexes before me. Dr. Hough (1899 Hough 79) describes the abdomen as brown-black, almost shining, with apices of segments whitish pollinose; halteres yellow; femora black, with apex sometimes yellow, tibiæ varying from yellowish with black rings, to black with yellowish bases; tarsi black-brown, with joints 1–2 yellowish; third section of fourth vein twice the second. This shows but little variation from these males. This species as here represented is distinguished by its small size, non-cleft hypopygium, short ovipositor, and black femora.

3. **P. dubius** n. sp.

♂. Bare, entirely black, except humeri brown, squamulæ yellow, halteres brown, pedicle yellow, extreme apices of femora, extreme bases and apices of tibiæ, yellow, basal joint of tarsi brown; antennæ (Fig. 30) rather abruptly short acuminate. Front and face silvery; occiput cinereous and brown. Mesonotum opake, brown pollinose; pleuræ and metanotum lightly cinereous. Abdomen opake to subopake; the narrow apical margins dilating into the broad ventral angles of segments 1–5 cinereous, semi-opaque, the broad bases of segments 2–4 brownish black becoming opake at extreme bases; fifth more shining, broadly cinereous tinged, brownish at base; hypopygium (Fig. 58) shining black, but faintly cinereous, small rather symmetrical, not cleft, but intermediate lobe fully visible, ventral lobe little developed, brownish. Legs rather slender, mostly black and cinereous, with inner surface of post-femora polished; spines weak. Wings (Fig. 138) grayish hyaline; stigma colored. Length, 2.8 mm.; wings, 3.8 mm.

♀. Front entirely shining, except just above antennæ; antennæ (Fig. 31) long acuminate; halteres yellow or with brownish knobs. Abdomen short, broadest at third and fourth segments, subopake, bluish-gray, with extreme bases of segment opake-brown; all are subequal in length, but sixth longer, grayish, and deeply grooved medianly, so much so as to make it appear to be composed of two separate plates. Ovipositor (Fig. 59) slender, brownish, abruptly thickened basally, extending to base of abdomen; articulated with, and abruptly terminating its subglobose grayish base. Only extreme base of tibiæ yellow; the tarsi are entirely black. Stigma of wing only colored at apical portion; the second section of fourth vein varying in the two specimens from $\frac{1}{2}$ to nearly $\frac{1}{3}$ of third section.

*Type.*—♂. Capens, Maine, July 15, 1907 (Figs. 30, 58, 138, *Johnson*, *B. S. N. H.*).

*Paratypes.*—Capens, Maine, 3 ♂s, 1 ♀, Fig. 31; Machias, Maine, 1 ♀, Fig. 59; Burlington, Vt., 1 ♂ (all by *Johnson*, *B. S. N. H.*); Kingston, R. I. (2 ♂s, *Barlow*, *B. S. N. H.*). Taken in June and July.

The male, from Burlington, Vt., has slight variation in the cinereous coloration of the abdomen, being less pronounced on the apical margins of segments, and the brown bases more opake, giving more contrast; also the front is more yellowish in color. A mutilated female from Highrolls, N. M. (*Viereck*, *A. N. S.*), comes very near this species, but the condition does not warrant its use as a type. The abdomen is grayish laterally only, and the legs are more yellow, the tibiæ being almost entirely so.

This species, in size and general appearance, approaches Loew's *nigripes*, but Dr. Hough says the hypopygium is cleft, which is not the case with these specimens, thus suggesting *loewii* Kertz (*fasciatus* Lw.), from which it differs in having the antennæ acuminate and the stigma longer than the fourth section of the costa.

4. **P. confraternus** Banks n. sp.

"Similar to *P. subopacus*, but the female has a very short ovipositor. ♂. Face and front silvery; antennæ (Fig. 34) dark, with long white tip to the third joint; occiput hoary; thorax brown-black, scutellum more shining, sides barely hoary; abdomen rather broad and flat, nearly shining, but somewhat greenish-black, the basal segment hoary, the sides of segments faintly hoary, legs pale, but femora with a broad dark band, leaving base and apex paler. Wings (Fig. 139) gray hyaline, stigma distinct, small cross-vein just below end of the auxillary, and slightly before end of basal third of cell. The last segment of abdomen is even from above and rather broad, the hypopygium bent under and not at all promient. Length, 3.3 mm.; wings, 3.8 mm."

♀. Similar. Front with parallel orbits, shining black, silvery just above antennæ. Abdomen not flattened, nearly shining; ovipositor short (Fig. 74), hardly longer than its base; fifth segment longer than fourth.

*Type.*—♂. Sea Cliff, Long Island (Figs. 34, 72, 73, 139, *coll. Banks*).

*Paratypes.*—Sea Cliff, Long Island (1 ♂, 1 ♀, Fig. 74 *coll. Banks*), Swarthmore, Pa. (1 ♂, *Cresson*, *A. N. S.*); Falls Church, Va. (1 ♀, *coll. Banks*). Taken in July and August.

In addition to the above description I note the following: Humeri yellow; halteres brownish-yellow; abdomen more or less brownish in certain aspects (I cannot distinguish any greenish tinge); fifth segment of male only slightly longer than fourth; hypopygium more shining, lightly tinged with gray and brown, very large (Figs. 72–73), semi-globose, nearly as broad as fifth and much longer, not cleft; intermediate lobe fully visible at sides; ventral lobe small and brown; legs rather slender with weak spines; apical and basal joints of post-tarsi in proportion 1:3; wings short with colored stigma.

This species is at once distinguished by the nearly shining indistinctly marked abdomen, the large globose hypopygium and short ovipositor. There is a male in the collection here without data, except label marked "Sept." It is very pale and much bleached, the legs almost entirely yellow.

5. **P. flavitarsis** Williston.

♂. Front and face silvery; antennæ black; third joint acute, yellow. Mesonotum and scutellum brownish; pleura grayish. Abdomen blackish-brown, subopake; first segment and apices of following opake gray. Legs black; extreme apices of femora, greater part of tibiæ and tarsi, yellow; femora not markedly thickened. Wings nearly hyaline; stigma yellow. Length 4.0 mm.

Described from Mexico. The description is too short to be of much value, but it seems to place the species very close to *nigricornis* Adams.

6. **P. nigricornis** Adams.

♂. Front and face silvery; antennæ black, with third joint short acuminate. Mesonotum brownish; pleura and metanotum silvery pollinose; scutellum subopake; halteres black. Abdomen black, subopake; apex of first, interrupted apices, dilating laterally, of 2–4, and broad apex of fifth, white. Hypopygium black, cleft. Femora, except bases and apices, black; tibiæ, except median ring, yellow; inner surface of post-femora polished. Wings hyaline; stigma fuscous. Length, 4.2 mm.; wings, 5.0 mm.

Described from Missouri. The species is unknown to me, but seems to be allied to the following. In the table of species I assume that the humeri are black.

7. **P. alternatus** n. sp.

♂. Front brownish or grayish; face silvery; antennæ brownish-black, with third joint broadly acute (Fig. 18). Mesonotum bare, opake brown; lateral and broad anterior margins cinereous, with rudiments of a pair of median brown vittæ. Scutellum opake-brown; pleuræ and metanotum cinereous; halteres and humeri brown or blackish. Abdomen opake, with bases of all segments velvety-brown; apices and broad lateral angles cinereous and more shining; segments 2–4 subequal and fifth as long as third and fourth together. Hypopygium small, much shorter than fifth, with a shallow apical cleft. Legs black, grayish, with apices of femora, bases of tibiæ, and tarsi, yellow; flexor and inner surfaces of post-femora polished. Wings hyaline with stigma twice the fourth section (Fig. 160). Length, 3.8 to 4.4 mm.; wings, 5.3 to 5.6 mm.

♀. Front and face silvery, former with a fine median black vitta expanding into the shining vertex; antennæ with third joint acute and minutely spiniform apically. Mesonotum opake-brown, anteriorly and laterally cinereous. Ovipositor long, straight and yellow. Simillar to Fig. 54 but longer, extending to base of abdomen, abruptly terminating its small shining black globose base,. Wings hyaline with short stigma, only one-half as long as fourth section. Length, 4.2 mm.; wings, 4.5 mm.

*Type.*—♂. Cloudcroft, New Mexico, June 18, 1902 (Fig. 160, *Viereck*, *A. N. S.*), No. 5024.

*Paratypes.*—Same locality, 1 ♂, 1 ♀. Taken in May and June.

This species seems very close to *loewii* Kert., but the hypopygium is cleft, and the stigma of male is distinctly longer than fourth section.

8. **P. nigripes** Loew.

This species was described from Pennsylvania, and also reported from New Jersey (1899 Smith 665), and New Hampshire (1902 Slosson 7). I have before me two males from Lansdale, Pa., July (Figs. 4, 53, *Cresson*, *A. N. S.*), and Ithaca, N. Y. (Fig. 123, *coll. Banks*), which seem to agree with Dr. Hough's description excepting in size, wherein these specimens are much larger (4.4 to 4.8 mm., while Loew gives the type as $1\frac{1}{6}$ lines or 2.5 mm.); these also have the antennæ acute, not short acuminate, as Dr. Hough gives it.

♂. Entirely black, bare, only extreme bases of tibiæ yellow. Front brown; face sericeous with brownish tinge; occiput cinereous. Antennæ acute (Fig. 4). Mesonotum and scutellum semi-shining, faintly brownish. Pleuræ and metanotum more or less cinereous. Abdomen short conical, little longer than thorax; margin of first segment silvery; following segments opake, nearly black basally, with the broad apices of a black graphite appearance, tinged with gray in some aspects, but ventral margins distinctly cinereous. Hypopygium more shining, rather small (Fig. 53), cleft; only the terminal lobe visible from above. Legs slender, post-tibiæ gently arched, or in the specimen from Ithaca, rather distinctly angular (Fig. 123); spines weak. Wings (Fig.

167) hyaline; colored stigma equalling or longer than fourth section. Length, 4.4 mm.; wings, 5.0 mm.

There are also three females from: Manomet, Mass. (*Johnson, B. S. N. H.*); Ithaca, N. Y. (Figs. 3, 55, *coll. Banks*); and Glencarlyn, Va. (Figs. 54, 167, *coll. Banks*). Taken in June and July. These probably belong to the foregoing males, although there may be two distinct species, one of which is represented by the specimen from Glencarlyn, seeming to differ in the shape of the ovipositor (Fig. 54).

♀. Front with a raised shining longitudinal area above, attenuating anteriorly; lower part and face silvery; antennæ (Fig. 3) acuminate. Mesonotum subopake, brownish; lateral margins of pleuræ and metanotum cinereous, the latter more whitish. Abdomen subopake, brownish pollinose with apex of first segment narrowly white; ventral margins and lateral angles, becoming thinner dorsally, or in some aspects entire apical margin of segments 2–5, and nearly all of sixth, cinereous; extreme bases of all segments opake-brown or black; second to fourth segments subequal in length. Base of ovipositor cinereous, elongate-conical (Fig. 55), tapering into the long slender, straight, yellow ovipositor, which extends to middle of thorax. Wings short, hyaline. Length, 4.4 mm.; wings, 4.4 mm.

The species as here designated may be distinguished by its nearly totally black appearance contrasted by the silvery band on first segment of abdomen and the complete apical subopake or grayish bands of following segments. I am not at all satisfied with this determination. There seems to be, at least, two distinct species here.

9. **P. semifasciatus** n. sp.

♂. *Front and face silvery;* occiput brownish to cinereous; antennæ black, acute, similar to *nigripes* (Fig. 3). Mesonotum and scutellum subopake, brown pollinose. Pleuræ and metanotum cinereous; humeri and halteres black, latter with pedicles brown. Abdomen short, hardly longer than thorax; first segment white apically; following segments opake-brown with apices and lateral angles subopake cinereous, *broadly interrupted medianly*, the interruptions diminishing in width successively, so that on the apical segments the basal brown portion just reaches the apices of segments in middle; venter opake-black. Hypopygium large (Fig. 47), rather shining and faintly brownish; intermediate lobe rather unusually developed below, and more or less wrinkled; terminal lobe with cleft, far to right, having a distinct appendage; ventral lobe black, not much developed. Legs black; trochanters brown; extreme apices of femora, bases of tibiæ and tarsi, yellow; apices of tibiæ brownish; femora moderately stout; post-tibiæ strongly arcuate, spines weak; inner surface of post-femora polished. *Wings decidedly brownish tinged;* stigma colored. Length 4.4 mm.; wings, 5.0 mm.

♀. Similar, especially to those placed under *nigripes* Lw., differing mainly in the apex of first abdominal segment being cinereous, not white, and much broader and interrupted medianly. The specimen examined is somewhat soiled, and the apices of following segments are not gray, but in certain aspects one can perceive faint indications of interrupted apical bands; the ovipositor is very long and slender (Fig. 48), gradually tapering from its elongate base; wings hyaline, stigma shorter than fourth section; ultimate section of fourth vein strongly sinuate.

*Type.*—♂. Mt. Tom, Mass., July 14, 1905, Fig. 47, *Johnson, B. S. N. H.*).

*Paratypes.*—Chain Bridge, Va. (1 ♂, Fig. 181, *coll. Banks*), Hanover, N. H. (1 ♀, Fig. 48, *Johnson, B. S. N. H.*). Taken in June and July.

This species may be separated from *nigripes* Lw., as here represented, by the silvery front and face, interrupted gray abdominal fasciæ and brownish wings of ♂, while the ♀ is only distinguished by the absence of the pure white narrow band of first abdominal segment. It is a question whether this female specimen is distinct from that species.

10. **P. caudatus** n. sp.

♂. Front and face sericeous, with yellowish tinge; occiput brownish-gray. Antennæ black, abruptly acuminate (Fig. 15). Thorax subopake, brownish tinged; pleuræ, especially metanotum cinereous tinged. Humeri and halteres black. Scutellum more shining. Abdomen nearly shining, brownish tinged; first, interrupted medianly, lateral angles and ventral margins of following segments weakly cinereous; fifth longer than fourth. Hypopygium nearly shining, terminal lobe very large (Figs. 60–61), as broad as, and about twice as long as fifth segment, quadrate, flattened apically by the large cleft; intermediate lobe just visible; ventral lobe black. Legs black, with trochanters, extreme apices of femora, and tarsi basally, yellow; tibiæ brownish, with dark median rings. Inner surfaces of post-femora polished; spines rather strong. Wings (Fig. 140) grayish; with stigma colored. Length, 3.5 mm.; wings, 3.8 mm.

*Type.*—Sea Cliff, Long Island, 5–10 Sept. (*coll. Banks*).

The abdomen is somewhat shrunken longitudinally, and is probably a little longer than given. The species is rather unique in having the abdomen nearly shining, with hardly any cinereous markings, and the large quadrate hypopygium.

11. **P. discolor** Banks, n. sp.

"♂. In the first section, with colored stigma and dull abdomen, the third joint of antennæ elongate, but not as much so as in *P. subopacus*, and dark colored, not white as in that species. It is also larger than that species. The face is silvery, the dorsum of thorax and abdomen dull black, the latter only indistinctly hoary on the sides; the legs pale, all femora black, except at base and tip. The wings are long, gray, with distinct stigma and black veins, the small cross vein before end of first third of cell, and a trifle before end of auxillary vein, the stigma being quite long, anal cell closed much before margin. The last segment of male abdomen is small and without cleft, but with a cavity at tip; the abdomen is longer than in *P. subopacus*, and does not show the tufts of hair on venter seen in that species. Length 4.5 mm."

*Type.*—Ithaca, N. Y., July (*coll. Banks*).

*Paratype.*—Ithaca, N. Y., July, one ♂ (*coll. Banks*).

I make the following notes upon examination of the type: Front and face with yellow tinge; antennæ abruptly acuminate (Fig. 27), somewhat sericeous; mesonotum and scutellum subopake, brown pruinose; humeri yellowish; halteres dark brown; pleuræ and metanotum faintly cinereous, the latter more densely so; abdomen opake, brownish; hypopygium (Fig. 52) rather large, as large as fifth segment; terminal lobe subquadrate, brownish with large cleft; basal and lateral lobes just visible; intermediate lobe visible from above; ventral lobe yellowish; tarsi blackish apically; femoral spines not discernable; stigma equalling fourth section or a little longer (Fig. 177).

This species comes near *fuscitarsis* Adams, from New Mexico, but is probably distinct; it is also similar to my *caudatus* but not so shining, and has the hypopygium less developed.

12. **P. fuscitarsis** Adams.

♂. Antennæ black, short acuminate; mesonotum brown pollinose with yellowish humeri and blackish halteres; abdomen evenly brown pollinose, with hypopygium cleft; femora and tibiæ mostly black; tarsi brown; wings brownish with distinct stigma. Length, 4.5 mm.; wing, 5.2 mm.

Described from New Mexico.